

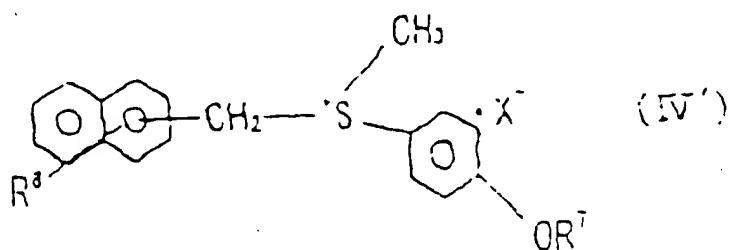
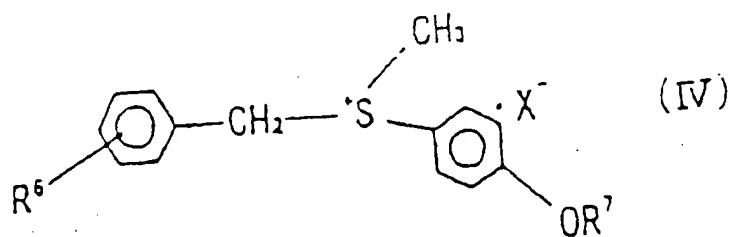
U.S. Patent Application Serial No. 09/664,332
Amendment dated October 22, 2003
Reply to OA of July 24, 2003

IN THE CLAIMS

Please amend claims 1 and 8 as follows:

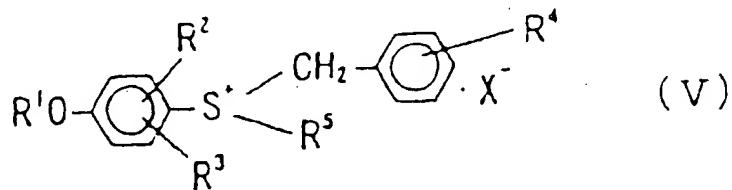
1. (Currently Amended): An energy-ray curing resin composition comprising a photopolymerizable resin component which can be cured by irradiation with an energy ray, a photopolymerization initiator component which makes it possible to cure by chain reaction said photopolymerizable resin component with irradiation of an energy ray, and a curing agent component capable of curing at least one of said photopolymerizable resin components without irradiation of an energy ray,

wherein said curing agent component comprises an acid anhydride or a derivative thereof, said photopolymerization initiator component comprises a sulfonium salt, the sulfonium salt being a photo-thermopolymerization initiator which can initiate polymerization by both of light and heat, and being represented by the following general formula (IV), (IV'), or (V):



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in Formula (IV) or (IV') described above, R⁶ represents hydrogen, halogen, a nitro group or a methyl group; R⁷ represent hydrogen, CH₃CO, or CH₃OCO; and X⁻ represents SbF₆⁻, PF₆⁻, AsF₆⁻ or BF₄⁻;



in Formula (V) described above, R¹ represents hydrogen, a methyl group, an acetyl group, or a methoxycarbonyl group; R² and R³ each independently represent hydrogen, halogen or an alkyl group of C₁ to C₄; R⁴ represents hydrogen, halogen or a methoxy group; R⁵ represents an alkyl group of C₁ to C₄; and x represents SbF₆⁻, PF₆⁻, AsF₆⁻ or BF₄⁻, and

wherein said curing agent component is present with a proportion of 0.3 to 1.4 mol per mol of said photopolymerizable resin component which can react with said curing agent component,

wherein said photopolymerization initiator component is present with a proportion of 0.1 to 6.0 parts by weight per 100 parts by weight of the whole weight of the other components than the photopolymerization initiator component.

2. (Original): The energy-ray curing resin composition as described in claim 1, further comprising a curing accelerator component which accelerates curing when curing at least one of said

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photopolymerizable resin components and said curing agent component without irradiation of an energy ray.

3. (Previously Presented): The energy-ray curing resin composition as described in claim 2, comprising an epoxy resin component having a cyclic ether structure in a molecular structure as the photopolymerizable resin component.

4-5. (Canceled)

6. (Previously Presented): The energy-ray curing resin composition as described in claim 2, comprising a monohydric or polyhydric alcohol as the curing accelerator component.

7. (Previously Presented): The energy-ray curing resin composition as described in claim 3, wherein said curing accelerator component comprises a compound which can react with the epoxy resin component and which does not have a nitrogen atom in a molecular structure.

8. (Currently Amended): The energy-ray curing resin composition as described in claim 3, comprising 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexanecarboxylate 3,4-epoxycyclohexylmethyl-3,4-epoxycyclohexanecarboxylate as the photopolymerizable resin component.

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9. (Withdrawn): The energy-ray curing resin composition as described in claim 4, comprising maleic anhydride or a derivative thereof as the acid anhydride or derivative thereof.

10. (Previously Presented): The energy-ray curing resin composition as described in claim 6, comprising polyethylene glycol as the alcohols.

11. (Canceled).

12. (Previously Presented): The energy-ray curing resin composition as described in claim 2, wherein the curing accelerator component is present with a proportion of 0.04 to 0.6 mol per mol of the curing agent composition.

13-16. (Canceled).

17. (Withdrawn): The energy-ray curing resin composition as described in claim 1, wherein the photopolymerization initiator component comprises a photopolymerization initiator comprising a binary or higher system containing a photopolymerization initiator and a photo-thermopolymerization initiator.

18. (Withdrawn): The energy-ray curing resin composition as described in claim 17, wherein the polymerization initiator component comprising the binary or higher system contains at least one

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of aryl base sulfonium salts or the iron-allene base compounds as the photopolymerization initiator and at least one of the sulfonium salts represented by Formula (IV), (IV') or (V) as the photo-thermopolymerization initiator.

19. (Withdrawn): The energy-ray curing resin composition as described in claim 17, wherein the polymerization initiator component comprising the binary or higher system contains the photo-thermopolymerization initiator in a proportion of 10 to 100 % by weight.

20. (Canceled)

21. (Withdrawn): An energy-ray curing resin-molded article obtained by curing the energy-ray curing resin composition as described in claim 1.

22. (Previously Presented): A paste material comprising the energy-ray curing resin composition as described in claim 1.

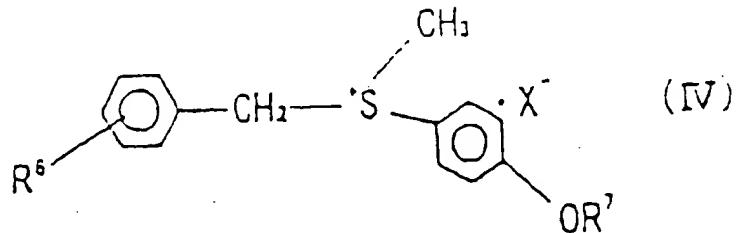
23. (Withdrawn): A composite molding material comprising the energy-ray curing resin composition as described in claim 1.

24. (Withdrawn): An adhesive comprising the energy-ray curing resin composition as described in claim 1.

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25. (Withdrawn): A coating material comprising the energy-ray curing resin composition as described in claim 1.

26. (Withdrawn and currently amended): A paste material according to claim 22, wherein the photopolymerizable photopolymerizable resin component is 3, 4-epoxycyclohexylmethyl-3-4,-epoxycyclohexanecarboxylate as the photopolymerizable resin component, wherein the photopolymerization initiator component is a sulfonium salt represented by the following Formula (IV)



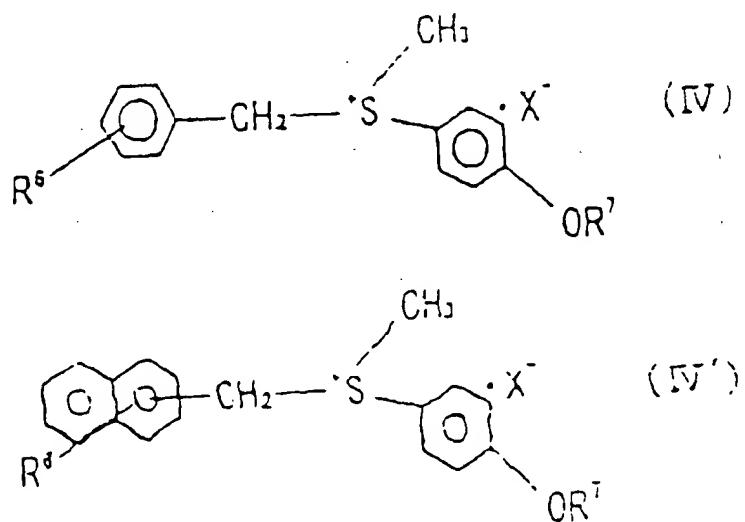
here R^6 represents hydrogen, halogen, a nitro group or a methyl group, R^7 represents hydrogen, CH_3CO or CH_3OCO ; and X^- represents AsF_6^- , and wherein the curing accelerator is polyethylene glycol.

27. (Previously Presented): A composition for an energy-ray curing resin-molded article comprising a photopolymerizable resin component which can be cured by irradiation with an energy ray, a photopolymerization initiator component which makes it possible to cure said photopolymerizable resin component with irradiation of an energy ray, and a curing agent component capable of curing at least one of said photopolymerizable resin components without irradiation of

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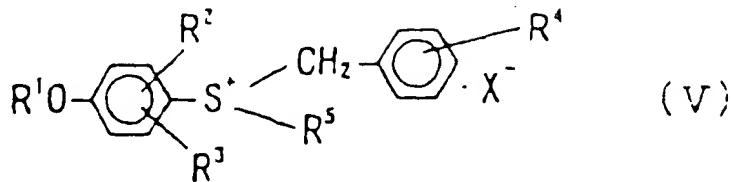
an energy ray,

wherein said curing agent component comprises an acid anhydride or a derivative thereof, said photopolymerization initiator component comprises a sulfonium salt, the sulfonium salt being a photo-thermopolymerization initiator which can initiate polymerization by both of light and heat, and being represented by the following general formula (IV), (IV'), or (V):



in Formula (IV) or (IV') described above, R^6 represents hydrogen, halogen, a nitro group or a methyl group; R^7 represents hydrogen, CH_3CO , or CH_3OCO ; and X^- represents SbF_6^- , PF_6^- , AsF_6^- or BF_4^- ;

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in Formula (V) described above, R¹ represents hydrogen, a methyl group, an acetyl group, or a methoxycarbonyl group; R² and R³ each independently represent hydrogen, halogen or an alkyl group of C₁ to C₄; R⁴ represents hydrogen, halogen or a methoxy group; R represents an alkyl group of C₁ to C₄; and x represents SbF₆⁻, PF₆⁻, AsF₆⁻ or BF₄⁻;

wherein said curing agent component is present with a proportion of 0.3 to 1.4 mol per mol of said photopolymerizable resin component which can react with said curing agent component,

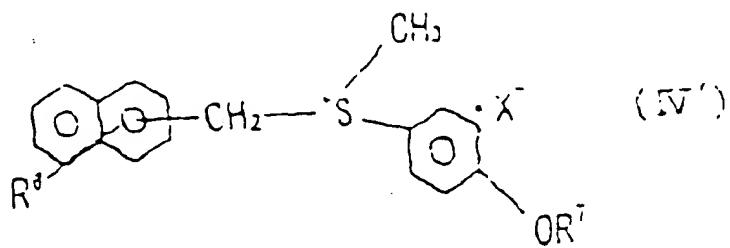
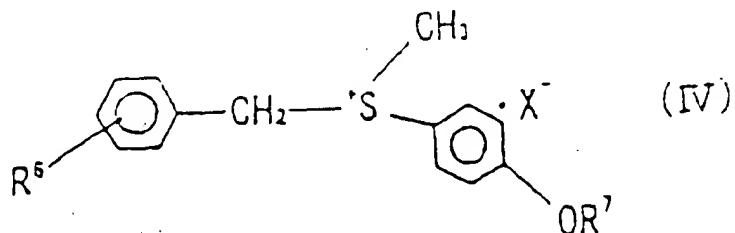
wherein said photopolymerization initiator component is present with a proportion of 0.1 to 6.0 parts by weight per 100 parts by weight of the whole weight of the other components than the photopolymerization initiator component.

28. (Previously Presented): An energy-ray curing resin composition for a paste material comprising a photopolymerizable resin component which can be cured by irradiation with an energy ray, a photopolymerization initiator component which makes it possible to cure said photopolymerizable resin component with irradiation of an energy ray, and a curing agent component capable of curing at least one of said photopolymerizable resin components without irradiation of an energy ray,

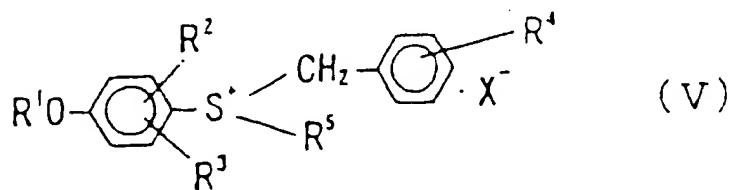
wherein said curing agent component comprises an acid anhydride or a derivative thereof, said photopolymerization initiator component comprises a sulfonium salt, the sulfonium salt being

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a photo-thermopolymerization initiator which can initiate polymerization by both of light and heat, and being represented by the following general formula (IV), (IV'), or (V):



in Formula (IV) or (IV') described above, R⁶ represents hydrogen, halogen, a nitro group or a methyl group; R⁷ represents hydrogen, CH₃CO, or CH₃OCO; and X⁻ represents SbF₆⁻, PF₆⁻, AsF₆⁻ or BF₄⁻;



in Formula (V) described above, R¹ represents hydrogen, a methyl group, an acetyl group, or a methoxycarbonyl group; R² and R³ each independently represent hydrogen, halogen or an alkyl group

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of C₁ to C₄; R⁴ represents hydrogen, halogen or a methoxy group; R⁵ represents an alkyl group of C₁ to C₄; and x represents SbF₆⁻, PF₆⁻, AsF₆⁻ or BF₄⁻;

wherein said curing agent component is present with a proportion of 0.3 to 1.4 mol per mol of said photopolymerizable resin component which can react with said curing agent component,

wherein said photopolymerization initiator component is present with a proportion of 0.1 to 6.0 parts by weight per 100 parts by weight of the whole weight of the other components than the photopolymerization initiator component.